Newsletter China Coal Information Institute www.coalinfo.net.cn
CHINA COALBED METHANE No 3 2003
A Publication of the China Coalbed Methane Clearinghouse, Supported by the USEPA, July 20, 2003

IN THIS ISSUE

International Workshop on CMM/CBM Development and ADB Demonstration Projects

Sponsored by the Asian Development Bank (ADB) and the United States Environmental Protection Agency (USEPA) and organized by China Coal Information Institute (CCII), the International Workshop on CMM Development and ADB Demonstration Projects is to be held in Yindu Hotel, Wutaishan, Shanxi Province September 9 ~ 12, 2003.

Coal mine methane is a cleaner energy which is receiving worldwide attention. The ADB and the USEPA have assisted China in carrying out a series of CMM development and utilization projects, which have produced fruitful achievements over the recent years. The ADB and the Chinese government signed agreement concerning the supply of US$200 million favourable loans to support the coalbed methane development in coal mine areas in China. Just recently, the “Feasibility Study on Jincheng 120MW Coalbed Methane Fired Power Generation Project”, realized with the ADB technical assistance funds, came to its completion. In order that both the Chinese and overseas colleagues get a thorough knowledge about this project and proceed to carry out discussions on the heated areas of coalbed methane development and utilization in China, this international workshop is to wage an all-round discussion on the said topics which are closely linked with actual cases. This is aimed at

identifying new beneficiary projects to use the ADB favourable loans. This would be of great impetus to the large-scale commercialized CMM development and utilization in coal mine areas in China.

Participants to this international workshop will include officials from international institutions such as the ADB and the USEPA, experts and professionals from the US, the UK and Australia who have long been devoted themselves to the cause of coalbed methane development as well as experts and leaders of relevant Chinese coal mines and coal industry institutions.

Major topics of this international workshop include evaluation of the feasibility of CMM fired power generation project of Jincheng, Shanxi Province, evaluation of coal mine methane resources in coal mine areas, CMM extraction technology, technical ways of CMM development and utilization and internationally practiced environmental protection oriented financing channels such as clean development mechanism (CDM) and carbon credit, etc.

This international workshop will provide sufficient time and space to both domestic experts and international experts so as to facilitate their profound communication so that an international cooperation platform is created on which opportunities of international cooperative project implementation are make possible.

ADB loans to be used on Liaoning environment improvement projects

Located in the northeast part of China, Liaoning Province has a total population of 41.03 million residents in its 14 provincial cities. The large and dense population, varied urbanization degrees and speed present great pressure on the environment of this province as a whole. It is therefore an urgent demand of Liaoning Province to address energy related environmental problems by increasing the supply of cleaner energy sources in the entire energy mix, optimizing the disposition of resources, sticking to energy saving and improving energy utilization efficiency so as to mitigate pollution.

Liaoning Province is faced with serious environmental problems especially environmental problems with water and air that are closely related with the fast economic development and use of coal in large quantities. The use of small coal fired boilers with low efficiency contributes greatly to the increase of SO_2 and dust emissions into the atmosphere, thus causing serious pollution in urban areas. The goal of this project is to assist the environment improvement in Liaoning Province. To this end, Liaoning provincial government suggests that the Liaoning environment improvement project should cover the following:

(1) Initializing coalbed methane commercialized development and utilization demonstration projects in Fushun city and Fushun coal mine area;
(2) Improving the fuel gas supply pipeline networks in 6 cities;
(3) Reforming the fuel gas supply system and improving the fuel gas supply management mode.

Liaoning provincial government stipulated very preferential policies on the development of central heating systems in a bid to replace small capacity heating boilers in urban areas. Liaoning provincial government therefore suggests that all project related be put under the environment improvement project to be realized with ADB loans.

Liaoning provincial government recommends the following environment improvement projects:

(1) The upgrading project of blast furnace cider

waste heat water for residential heating from the No.1 blast furnace of Anshan Iron and Steel Co and the separated heat supply system to residential households

(2) Fushun coal mine area coalbed methane development project
(3) Fushun city fuel gas pipeline network upgrading project
(4) Benxi city fuel gas pipeline network upgrading project
(5) Tiebei thermal power plant in Linghe district, Jinzhou city
(6) Jinzhou Thermal Power General Co heat supply works expansion project
(7) Fuxin city coalbed methane development project
(8) Central heating project in Central district, Liaoyang city
(9) Yingkou city central heating project

Huainan: "Thermal Power Three-Gorge Project" brings chances to CBM

China Huaneng Group Co, China Power Investment Group Co and Huainan Mining (Group) Co held an agreement signing ceremony in Beijing earlier for the signature on the "Letter of Intention on the Joint Development and Construction of Huainan Coal and Electric Power Base". This move indicates that construction of Huainan coal and electric power base envisages an official start after decades of efforts concentrated on the relevant preparations. With this Letter of Intention signed, one can foresee that a "thermal power Three-Gorge" project with installed capacity larger than that of the true "Three-Gorge" project will take shape in Huainan area, Anhui Province by the time when the "Three-Gorge" project on the Yangtze River is completed in 2009. The "thermal power Three-Gorge" project is to send electricity to Shanghai, Jiangsu Province and Zhejiang Province by then.

For a long time in the past, large-sized coal mine development and electric power development projects used to be on the shoulders of the state government. This always involved huge investments and the low efficiency in the implementation of the projects. The present collaboration among the three large-sized companies out of their negotiation for the construction of large-sized electric power project by their joint efforts indicates that along with the quickened pace of market oriented reform designed for the energy sector such as the coal industry and the power industry, coal and power project implementation and construction are taking to a new road towards improved economic returns which is guaranteed by the participation of coal mines and power companies. This practice will also contribute to a more stabilized coal supply and demand on the coal market.

Huainan area in Anhui Province is the coal richest region in the eastern part of China. Coal resources here is endowed with thick coal seams, easier geological conditions, good coal quality with low sulfur content, low phosphorous content, good caking property and good coking property, etc. Coal produced in Huainan area is a quality steam coal good for power generation. Decades long exploration and survey have proved that the theoretical total coal reserves in Huainan area amount to about 20,000Mt with proved available coal reserves of about 15,300Mt. Of these total, about 5,500Mt is covered by the existing coal mines and about 9,800Mt of coal reserves are yet to be tapped. The joint endeavour of the said three companies including Huaneng, China Power Investment and Huainan Mining in the formulation of a project joint operation company by joint

investments for the development of Huainan coal and electric power base is just a move to meet the future electric power demands in the east China region according to the state industrial policies.

On the basis of the investigation and survey conducted by China Power Engineering Consulting Group Co, the private sector is developing at a fast rate, the state-owned enterprises are improving their performances as a result of the reform and international capitals and multinational industries are transiting towards the Yangtze River delta area. This has resulted in very fast growth in electric power demands in the east China region over the years. Power demands on the east China power grids increased at an average annual rate of 13.3% during 2000, 2002 and 2003. The average power load on the east China power grid increased by a maximum of 5500MW over the last three years. The fact that only limited number of power projects have been added since 1998 has resulted in minimum number of newly added power projects that became available for power generation over the last three years. It is therefore natural that more and more frequent power blackouts were experienced throughout the east China power grids over the last two years. What is more, the insufficient availability of power generating units and increasing hours of generating unit utilization rate left the east China power grid the worst power grid of this country that suffer the shortfall of power supply. On the basis of the power load prediction and power balance analysis conducted, it is predictable that the annual increase rate of social power consumption on the east China power grid will be as high as 8.4% by the year 2005. This will need the addition of power generating capacity of 13,000MW. Even with the power supply from the “Three-Gorge” project, hydro power supply from Sichuan Province in times of affluent hydro power production and thermal power supply from Yangcheng in Shanxi considered, the east China power grid still calls for the addition of 6,800MW of generating capacity. When the state project of western electricity transmission to the east begins to send power to east China region in 2010, this region still calls for additional generating capacity of 28,200MW. According to an expert of China Power Engineering Consulting Group Co, under this circumstance, speeding up the development of Huainan coal and power base is a good solution to satisfying the growing power demands in east China region and also a good solution to reducing the environmental pollution caused by coal transport over long hauls. In addition, this initiative will be also of great significance to assisting Anhui Province to catch up with other east China provinces in terms of economic development.

According to informed sources, based on the power demands from the east China region, the implementation of the project of “thermal power Three-Gorge” Huainan coal and power base construction will follow the way of multiple phased development and construction under overall planning. The first phase of this project is to construct a 2 X 1200MW coal fired power generating project completed with sufficient coal production capacity during the tenth “Five-Year-Plan” period (2001 ~ 2005). It is planned to construct 10,000MW power generating capacity power plants supported by coal mines with coal production capacity of 30Mt/a by 2010. For longer term development, the Huainan coal and power base will have a total generating capacity of 20,000MW by the year 2020. This would be more than 1,000MW more than the total generating capacity of the Three-Gorge hydro power plant. What is more,

the Huainan coal and power base is to be supported by a 60Mt/a coal mine area. On the basis of an annual coal production capacity of 60Mt, the available coal reserves in Huainan coal mine area will be sufficient to support more than 120 years of electricity production at the generating capacity of 20,000MW. An estimate indicates that the total static investments on this project of the “thermal power Three-Gorge” will amount to more than 100.0 billion yuan. The construction of this project proper will positively stimulate the economic development in Huainan area and the entire province of Anhui as a whole.

Huainan coal mine area is one of China’s largest coal mine areas. Coal seams in Huainan coal mine area have good absorption property and therefore they are rich in coalbed methane content. Total coelbed methane resources in Huainan coal mine area is about 592.8 billion m^3. Start of the “thermal power Three-Gorge” project will drive up the production of coal in this area. In a bid to realize good work safety in coal production, underground methane drainage projects and surface coalbed methane extraction projects will be carried out prior to the start of coal mining operation.

The project “thermal power Three-Gorge” brings about very precious opportunity for the commercialized development of coalbed methane in Huainan coal mine area.

Shanxi: containerized compressed coalbed methane storage & transport demonstration project evaluated

Conducted by Shanxi Energy Industrial Group, the first ever commercialized coalbed methane surface development demonstration project of Shanxi Province passed the evaluation organized by Shanxi Provincial Development Commission earlier. This project aims at transporting the coalbed methane extracted in Jincheng coal mine area to Changzhi city and Gaoping city after compression process. This is the first actual case in this country that sells the surface extracted coalbed methane as real commodity.

Coalbed methane is generally known as coal mine gas which is inter-grown with coal. Limited by the lack of capitals and technical limitations, coalbed methane was totally vented to the atmosphere during coal mining in the past. This not only results in bad air pollution, but also a serious waste of energy.

Development of coalbed methane mainly relies on 2 methods. The first one is to collect and drain the methane gas from underground mines and the second method is to extract the methane gas from wells or boreholes drilled from the surface. Then, pipeline network is used to transmit the extracted coalbed methane or the compressed methane gas to places where the gas is needed. The transport or transmission is carried out in a scaled way. The latter method is actually the coalbed methane development in its true meaning.

The containerized compressed coalbed methane storage & transport demonstration project conducted by Shanxi Energy Industrial Group that have just passed evaluation concerns the surface coalbed methane extraction from Zaoyuan coalbed methane development demonstration zone in Jincheng. Extracted methane gas is first compressed and then transported to Changzhi city and Gaoping city and sells as compressed fuel gas commodity to residents there. This demonstration project is also the first ever commercialized surface extracted methane gas project of China.

According to informed sources, Shanxi Energy Industrial Group has reached coalbed methane

supply intention with Changzhi city and Gaoping city of Shanxi Province on the daily supply of 20,000 m^3 of such fuel gas. When this project becomes operational by the end of this year, fuel gas supply shortfalls in either cities will be greatly alleviated.

Zaoyuan coalbed methane pilot zone of Jincheng is within the Qinshui coalbed methane field. Approved by the State Development Planning Commission (SDPC) in 1999, this project has completed the drilling of 16 coalbed methane wells of which 10 wells have started gas production. Daily gas production is generally stabilized at somewhere more than 10,000 m^3.

The total coalbed methane reserves of 10 trillion m^3 in Shanxi Province account for 1/3 of the national total. The development of coalbed methane in Shanxi Province will be of substantial significance to the provincial and national energy restructuring and environmental protection as well.

Investment Opportunities in Coal Mine Methane Projects in Fushun Area

Fushun Mining Group Co., Ltd. is a large state-owned coal enterprise in China. Currently, coal production in the Fushun mining area is about 6 million tons per annum. Fushun is mainly producing blending coking coal and steam coal.

Fushun Mining Group Co., Ltd. is also rich in coalbed methane resources that total around 8.9 billion m^3. Coal in this mining area is low in sulfur and ash content, and has well-developed fissures. Porosity of the coal is up to 10%. Fushun coal also has very good permeability which averages at 0.5 - 3.8 md. Since coal seams in the Fushun mining area have high permeability, high gas content, good gas reservoir conditions and high methane content, conditions are favorable for the commercialization of coalbed methane development and utilization.

Fushun is one of the first mining areas where underground gas drainage was adopted. Annual coal mine methane drainage in the Fushun mining area has been over 100.0 million m^3 since 1983. Coal mine methane drainage in 2000 reached 126 million m^3.

In 2000, the Fushun Mining Group Co., Ltd. signed a contract with the Northeast Bureau of Coal Geology for joint development of coalbed methane in the Fushun mining area. So far, two surface wells have been drilled and one of them is in the process of trial production, with a daily output reaching 2,000 m^3.

Investment Opportunities

CMM from the Fushun mining area is mainly supplied to the city of Shenyang. The first stage of the Shenyang CMM supply project has been completed, with a designed supply capacity of 58.8 million m^3. Following is a summary of the second stage of project, for which Fushun Mining Group Co., Ltd. is seeking investments:

Second stage of the Shenyang CMM supply project. The purpose of the second stage of the project is to supply to Shenyang with a mixture of high concentration CMM from surface wells and from underground drainage systems of the Laohutai Mine. Thirty-two wells will be drilled, with CMM production from each well estimated at 4,000 m^3/d. Based on current and planned underground drainage and utilization at the Laohutai Mine, the annual gas supply for the Shenyang CMM supply project is 15.12 Mm^3. The supply capacity of the second stage of the project will reach an estimated 61.84 Mm^3 annually. Total cost of the second stage of the project is estimated at 155.58 million yuan ($US 18.74 million). The funding sources can be divided into two parts. The first part includes relevant bank loans and investment from foreign

companies totaling 76.63 million yuan ($US 9.23 million). The second part is self-raised funds of Fushun Mining Group Co., Ltd. and utilization of existing facilities. The self-raised funds will be 41.26 million yuan ($US 4.97 million), utilization of existing facilities 37.7 million yuan ($US 4.54 million). Based on the total investment of 155.58 million yuan ($US 18.74 million), the estimated net present value would be 66.5 million yuan ($US 8.01 million), the internal rate of return would be 23%, and payback time would be 7 years. Fushun Mining Group Co., Ltd. proposes to begin the project in April 2002 and anticipates completion by the end of 2005.

Fushun Mining Group Co., Ltd. recognizes that investment in the project entails certain inherent risks, such as potential fluctuations in CMM production and sales prices. Fushun Mining Group Co., Ltd. is prepared to address investor concerns with other important issues, such as repatriation of funds.

Fushun Mining Group Co., Ltd. is willing to consider various types of partnerships and financing sources in order to realize the proposed projects. Representatives of banks, foreign companies, foreign governments and international agencies are encouraged to review the attached marketing package and contact us for more information:

Sui Yulin, Deputy Chief Engineer
Fushun Mining Group Co., Ltd.
No. 2, West 10 Road, Xinfu District
Fushun Liaoning 113008 China
Tel: 0086-413-253-2740
Fax: 0086-413-253-2742

For more information, please contact :

Clark Talkington
Team Leader, Coalbed Methane Programes USEPA
Tel: (001)202-564-8969
Fax: (001)202-565-2254
E-mail: talkington.clark@epa.gov

Huang Shengchu
Deputy Director, China Coalbed Methane Clearinghouse
Tel: (0086)10-84657818
Fax: (0086)10-84657948
E-mail: cbmc@public.bta.net.cn